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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,306	04/25/2001	David John Benjamin Pearce	CM00620P	6704

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EXAMINER	
WOZNIAK, JAMES S	

ART UNIT	PAPER NUMBER
2626	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/830,306	PEARCE ET AL.	
	Examiner	Art Unit	
	James S. Wozniak	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,7,9-13,15,16,18,19 and 21-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9,10,21 and 22* is/are allowed.

6)☒ Claim(s) *1,3,4,6,7,11-13,15,16,18,19 and 23-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *4/25/2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the office action from 8/29/2006, the applicant has submitted an amendment, filed 2/26/2007, amending claims 1, 9, 13, and 21, while canceling claims 27-30 and arguing to traverse the art rejection based on the limitation regarding replacement parameters corresponding to copies of speech recognition parameters of a different time frame *(Amendment, Page 8)*. Applicant's arguments have been fully considered, however the previous rejection is maintained due to the reasons listed below in the response to arguments.

Response to Arguments

2. Applicant's arguments have been fully considered but they are not persuasive for the following reasons:

With respect to **Claims 1, 3, 13, and 15**, the applicants argue that the prior art of record fails to teach replacing a speech recognition parameter or vector with copies of such parameters/vectors corresponding to a different time frame *(Amendment, Page 8)*. In support of these arguments, the applicants state that the replacement parameters taught by Jeon et al *(U.S. Patent: 5,673,363)* are not copies, but are weighted parameters from other frames received without error *(Amendment, Page 8)*.

In response, the examiner notes that the aforementioned claim limitations are taught by the combination of the teachings of Jacobs et al (U.S. Patent: 5,956,683) and Jeon. Jacobs discloses a distributed speech recognition system utilizing speech vector parameters arranged in frames (Col. 5, Lines 22-43; Col. 6, Lines 13-30; Col. 6, Lines 58-63; and Col. 9, Lines 7-20). Jacobs does not provide for transmission error correction, but Jeon discloses replacing error frames of parameters *(or speech recognition vectors in the case of Jacobs)* with copies of coefficients from future frames without errors *(Col. 4, Line 62- Col. 5, Line 2; and Col. 6, Lines 20-26)*. Although these replacement parameters taught by Jeon are weighted, as the applicants point out, the weighted parameters are essentially copies of parameters of a different frame because they are still selected and copied from a future time frame, even if they are later weighted. Also, the examiner further notes that a weighting factor can be equal to one *(Col. 5, Lines 18-19)*. In such a case, the weighted replacement parameters would represent direct copies of parameters from different frames. Thus, for at least the above reasons, claims 1, 3, 13, and 15 remain rejected under 35 U.S.C. 103(a). The dependent claims further limit rejected independent claims, and thus, also remain rejected.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 3, 13, 15, and 25-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)*.

With respect to **Claims 1, 3, 13, and 15**, Jacobs discloses a distributed speech recognition process in which speech recognition parameters are arranged in vectors *(extracted speech recognition feature vectors, Col. 5, Lines 22-43; and Col. 6, Lines 13-30)*, each vector corresponding to a particular sampling time frame *(feature vectors arranged in frames, Col. 6, Lines 58-63)* and the speech recognition parameters are received at a second location having been transmitted from a first location *(transmitting speech feature vectors to a remote location over a communication channel, Col. 9, Lines 7-20)*.

Jacobs does not provide for any type of transmission error correction as is disclosed in the presently claimed invention, however Jeon recites:

Identifying a group comprising one or more audio (speech in the case of Jacobs) parameters which have undergone a transmission error *(detecting an error in a received frame, Col. 4, Lines 22-28)*; and

Replacing one or more parameters in the identified group, wherein one or more parameters are replaced by respective replacement parameters corresponding to parameters from a different time frame, received without error after the identified error group *(utilizing coefficients from a future frame without error to reconstruct a detected error frame, Col. 4, Line 62- Col. 5 Line 2; and Col. 6, Lines 20-26)*.

Jeon further discloses that the reconstruction coefficients are closet in receipt order to the error-containing frame *(coefficients from a contiguous frame used for error-containing frame reconstruction, Col. 6, Lines 20-26 and Lines 58-63)*.

Jacobs and Jeon are analogous art because they are from a similar field of endeavor in audio encoding. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jacobs with the transmission error correction means taught by Jeon in order to conceal errors of an error-containing frame while minimizing its influence on succeeding frames *(Jeon, Col. 6, Lines 58-63)*.

With respect to **Claims 25 and 26**, Jacobs further discloses a wireless communication channel *(Fig. 2; and Col. 5, Lines 22-43)*.

5. **Claims 4 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)*, and further in view of Ozawa *(U.S. Patent: 5,305,332)*.

With respect to **Claims 4 and 16**, Jacobs in view of Jeon teach the error correction system and method that conceals errors by replacing speech parameters from a error-containing frame with speech parameters from a closest frame, as applied to Claims 3 and 15. Jacobs in view of Jeon do not specifically suggest a well-known method for error recovery using interpolation, however Ozawa teaches such a method *(interpolating pitch and filter parameters from past and future proper frames to correct transmission errors, Col. 4, Lines 7-12)*.

Jacobs, Jeon, and Ozawa are analogous art because they are from a similar field of endeavor in speech parameter coding. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Jacobs in view of Jeon with the use of interpolation in error recovery as taught by Ozawa in order to provide improved error correction by using parameters from past and future frames *(Ozawa, Col. 6, Lines 32-40)*.

6. **Claims 6-7, 11-12, 18-19, and 23-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobs et al *(U.S. Patent: 5,956,683)* in view of Jeon et al *(U.S. Patent: 5,673,363)*, and further in view of Yeldener et al *(U.S. Patent: 5,774,837)*.

With respect to **Claims 6 and 18**, Jacobs in view of Jeon teach the error correction system and method that conceals errors by replacing speech parameters from a error-containing frame with speech parameters from future correct frames, as applied to Claims 1 and 13. Jacobs in view of Jeon teach do not teach the method of error detection through comparison of a speech estimate to a threshold, however Yeldener discloses:

An error mitigating method and apparatus, wherein determination of which speech recognition parameter or parameters are to be replaced is performed by predicting fro vectors received without error, a predicted value for each speech recognition parameter within the identified group of vectors, and replacing those speech recognition parameters within the identified group of vectors that are outside of a predetermined threshold relative to their respective predicted value *(comparing an estimated pitch value of a frame to previous values to detect a variation in a speech signal indicative of an error, Col. 13, Lines 37-50)*.

Jacobs, Jeon, and Yeldener are analogous art because they are from a similar field of endeavor in audio parameter coding. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to combine the method of estimating a pitch value and comparing it to a threshold for error detection as taught by Yeldener with the teachings of Jacobs in view of Jeon teach in order to provide a means of further error detection for frame smoothing to improve the quality of reproduced speech *(Yeldener, Col. 13, Lines 37-50)*.

With respect to **Claims 7 and 19**, Yeldener teaches a means for changing parameters of a frame if one parameter does not satisfy a threshold condition, as applied to Claims 6 and 18.

Claims 11 and 23 contain subject matter similar to Claims 6 and 18, and thus, are rejected for the same reasons.

With respect to **Claims 12 and 24**, Yeldener teaches the subject matter applied to Claims 6 and 18, wherein an error is detected in a three frame period.

Allowable Subject Matter

7. **Claims 9-10 and 21-22** are allowable over the prior art of record.

8. The following is an examiner's statement of reasons for allowance:

With respect to **Claims 9 and 21**, although the combination of Jacobs et al *(U.S. Patent: 5,956,683)* and Jeon et al *(U.S. Patent: 5,673,363)* evidences that a distributed speech recognition system that replaces error vectors/parameters with parameters from a future frame received without error is well known in the art (as is noted above), the prior art of record fails to teach or specifically suggest, either individually or in combination, the process of comparing mel cepstral speech vectors that are within a predicted parameter value threshold to a set of reference vectors to find a best match vector and then using that best match vector to replace a mel cepstral speech vector that fulfills an error condition of being outside of a predicted parameter threshold to conceal transmission errors in a distributed speech recognition system as set forth in claims 9 and 21.

Claims 10 and 22 further limit claims containing allowable subject matter, and thus, are also allowable over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632. The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Edouard can be reached at (571) 272-7603. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James S. Wozniak
4/26/2007

PATRICK N. EDOUARD
SUPERVISORY PATENT EXAMINER